

Supporting Information

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Cytotoxic Sesquiterpenoids and Diarylheptanoids from the Rhizomes of *Curcuma elata* Roxb.

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Extraction and Isolation of the Air-dried Rhizomes of *Curcuma elata*

The air-dried rhizomes of *C. elata* (8.5 kg) were milled and macerated successively with *n*-hexane and EtOH. The hexane and EtOH solutions were filtered and concentrated to dryness under reduced pressure at temperature 40-45 °C to give the hexane extract (brownish syrup, 129.7 g) and the EtOH extract (dark brownish sticky solid, 281.5 g).

Hexane Extract

The hexane extract (129.0 g) was fractionated by column chromatography (CC) (Merck silica gel 60, 0.063-0.200 mm, 250 g) eluting with *n*-hexane, *n*-hexane-EtOAc, and EtOAc with increasing amount of the more polar solvent. The eluates were examined by TLC and 8 groups of eluting fractions were obtained.

Group 3 (Fractions 5-17): These combined fractions were chromatographed over silica gel and eluted under isocratic condition (1% EtOAc in *n*-hexane) to afford germacrone (**1**) as colorless prisms (575.9 mg), m.p. 49-50 °C (from MeOH) and curzerenone (**2**) as a colorless oil (475.6 mg).

Group 4 (Fractions 18-40): These combined fractions were chromatographed over silica gel and eluted under isocratic condition (2% EtOAc in *n*-hexane) to afford 3 subfractions. Subfraction 1 (fractions 1-31) was separated on a Sephadex LH-20 eluting with MeOH and further purified by silica column chromatography eluting with 0.6% EtOAc in *n*-hexane to yield isofuranodienone (**3**) as a colorless oil (3.2 mg). Subfraction 3 (fractions 40-51) was subjected to repeated column chromatography eluting under isocratic condition (1% EtOAc in *n*-hexane) to give furanodienone (**4**) as a colorless oil (44.3 mg).

Group 5 (Fractions 41-57): These combined fractions were chromatographed over silica gel using 2% EtOAc in *n*-hexane as eluent, followed by column chromatography eluting under isocratic condition (1% EtOAc in *n*-hexane) to give curdione (**5**) as colorless prisms (129.9 mg), m.p. 55-56 °C (from EtOAc-*n*-hexane) and neocurdione (**6**) as a colorless prisms (385.8 mg), m.p. 41-42 °C (from EtOAc- *n*-hexane).

Group 7 (Fraction 60): This fraction was repeatedly recrystallized with EtOAc in *n*-hexane to afford zederone (**7**) as colorless needles (11.85 g), m.p. 153-154 °C (from EtOAc-*n*-hexane).

Group 8 (Fractions 61-62): These combined fractions were chromatographed over silica gel and eluted under isocratic condition (5% EtOAc in *n*-hexane) to afford 6 subfractions. Subfraction 3 (fractions 5-6) was rechromatographed over silica gel eluting with CH₂Cl₂ to give curcumenone (**8**) as colorless oil (144.3 mg). Subfraction 5 (fractions 11-13) was subjected to two repeated column chromatography eluting under isocratic condition (15% EtOAc in *n*-hexane) to yield 13-hydroxygermacrone (**9**) as colorless oil (45.8 mg).

EtOH Extract

The EtOH extract (270.0 g) was fractionated by column chromatography (Merck silica gel 60, 0.063-0.200 mm, 520 g), using a gradient solvent system of *n*-hexane, *n*-hexane-EtOAc, EtOAc, EtOAc-MeOH and MeOH with increasing amounts of the more polar solvent. The eluates were examined by TLC and 3 combined fractions were obtained.

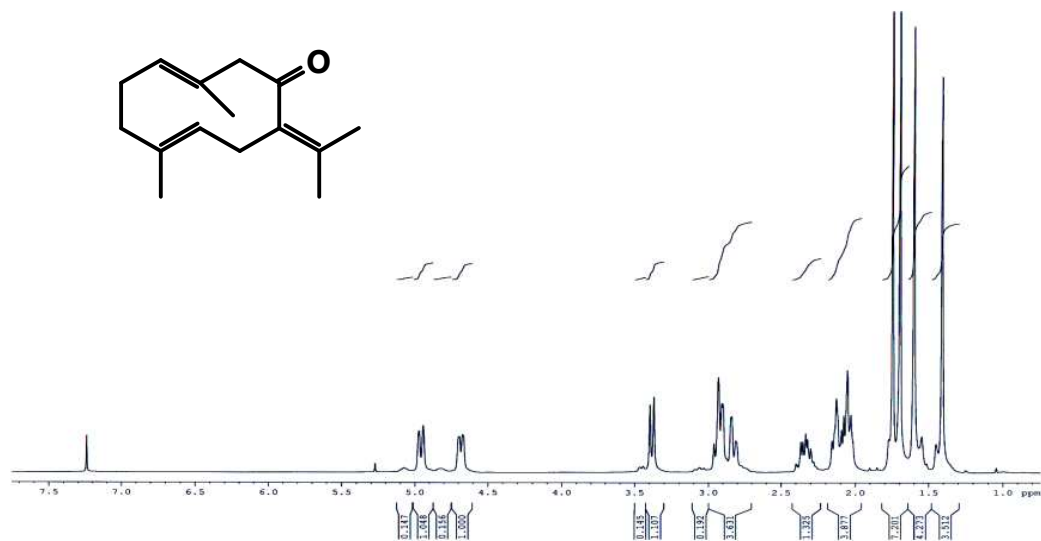
Group 2 (Fractions 40-58): These combined fractions were chromatographed over silica gel and eluted under isocratic condition (0.5% MeOH in CH₂Cl₂) to afford 4 subfractions. Subfraction 2 (fractions 13-17) was separated on Sephadex LH-20 eluting with MeOH and further purified by column chromatography over silica gel RP-18 with 30% MeOH in H₂O as eluting solvent to give 3-hydroxy-5-platyphyllone (**11**) as colorless viscous oil (2.7 mg), (3*S*)-1,7-*bis*(4-hydroxyphenyl)-(6*E*)-6-hepten-3-ol (**12**) as amorphous powder (20.2 mg), m.p. 112-113° (EtOAc-*n*-hexane) and centrolol (**13**) as amorphous solid (7.5 mg). Subfraction 3 (fractions 18-23) was separated on Sephadex LH-20 eluting with MeOH, followed by column chromatography over silica gel RP-18 with 30% MeOH in H₂O to yield (3*S*)-1-(3,4-dihydroxyphenyl)-7-(4-hydroxyphenyl)-(6*E*)-6-hepten-3-ol (**14**) as amorphous solid (2.1 mg).

Group 3 (Fractions 59-60): These combined fractions were chromatographed on a Sephadex LH-20 and eluted with MeOH and further purified by chromatography over silica gel

RP-18 with 30% MeOH in H₂O to give zedoarondiol (**10**) as colorless needles (7.5 mg), m.p. 123 °C (from EtOAc-*n*-hexane).

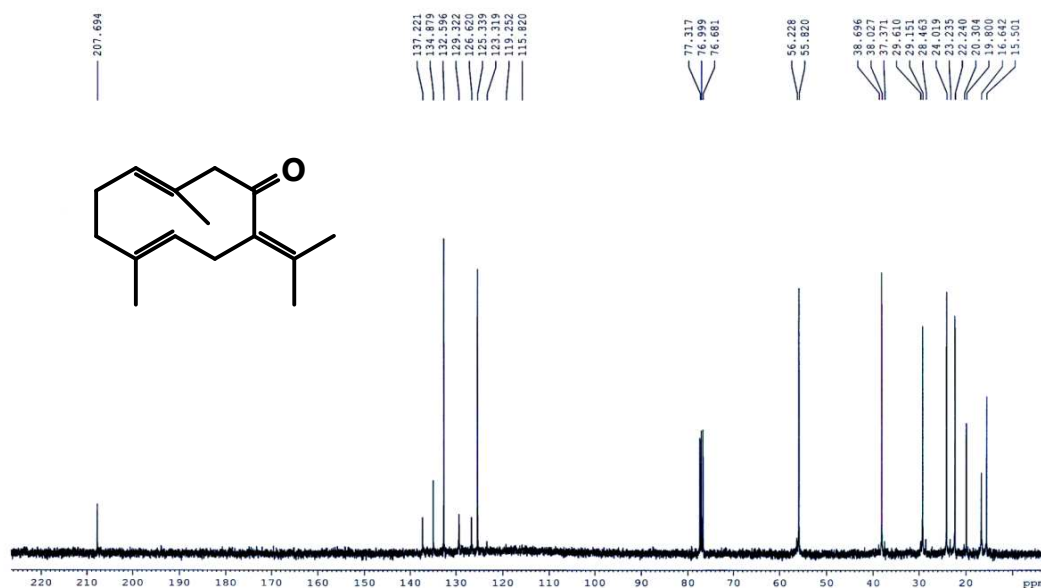
Preparation of the MTPA Ester of Compounds **11** and **12**.

To a solution of the compound **11** (2.1 mg) in dry pyridine (100 μL) was added (*R*)-(-)-MTPA chloride (15 μL) at 10 °C and the mixture was stirred for 5 min. Stirring continued at ambient temperature and the completion of reaction was monitored by TLC. Two milliliters of *n*-hexane was added to the reaction mixture and the hexane-soluble part was subjected to flash column chromatography using *n*-hexane and 15% EtOAc/*n*-hexane as eluting solvent to give the (*S*)-MTPA ester **11x** (3.2 mg). The procedure was repeated, but using (*S*)-(+)-MTPA chloride in place of (*R*)-(-)-MTPA chloride, to yield the (*R*)-MTPA ester **11y** (3.5 mg). The ¹H NMR spectra of **11x** and **11y** were recorded in CDCl₃; the chemical shift differences of the proton resonances between the (*S*)-MTPA ester **11x** and the (*R*)-MTPA ester **11y** were calculated and the results are summarized in **S29**. Following the above procedure, the absolute configurations of esters **12x** and **12y** were determined, and the results are summarized in **S30**.



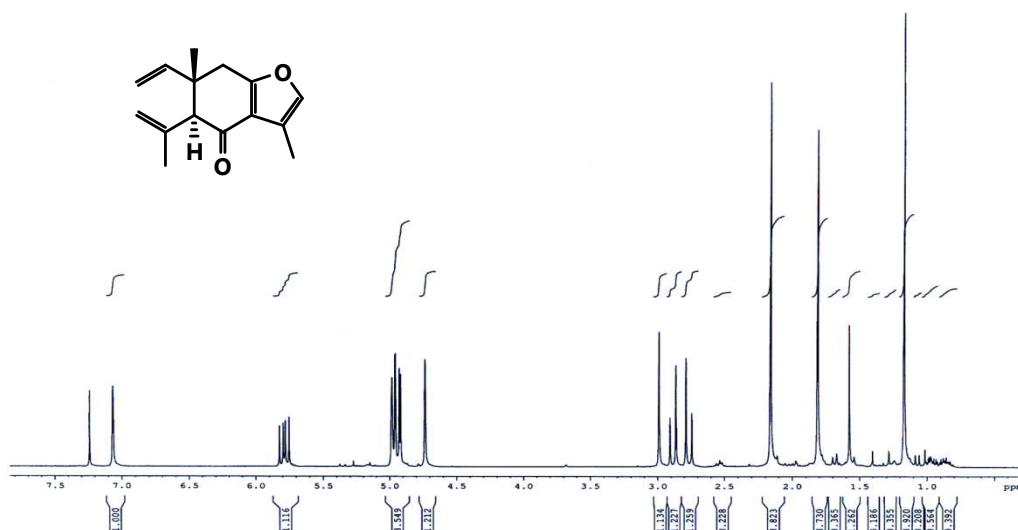
S1. $^1\text{H-NMR}$ spectrum of germacrone (**1**) in CDCl_3

Germacrone (1): $^1\text{H-NMR}$ (CDCl_3 , 400 MHz), δ : 4.95 (1H, br d, $J = 11.6$ Hz, H-1), 2.05 (1H, m, H-2 α), 2.35 (1H, m, H-2 β), 2.06 (1H, m, H-3 α), 2.13 (1H, m, H-3 β), 4.68 (1H, br d, $J = 9.0$ Hz, H-5), 2.82 (1H, br d, $J = 12.5$ Hz, H-6 α), 2.91 (1H, br d, $J = 12.5$ Hz, H-6 β), 2.92 (1H, d, $J = 10.0$ Hz, H-9 α), 3.38 (1H, d, $J = 10.0$ Hz, H-9 β), 1.77 (3H, s, H-12), 1.69 (3H, s, H-13), 1.41 (3H, s, H-14), 1.60 (3H, s, H-15).



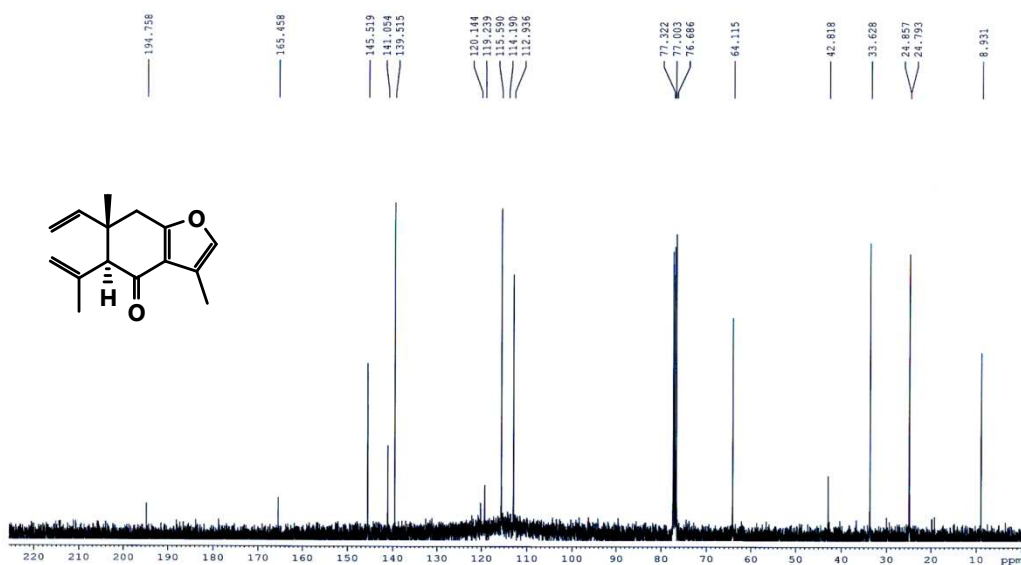
S2. $^{13}\text{C-NMR}$ spectrum of germacrone (**1**) in CDCl_3

Germacrone (1): $^{13}\text{C-NMR}$ (CDCl_3 , 100 MHz), δ : 134.8 (C-1), 24.0 (C-2), 38.0 (C-3), 134.8 (C-4), 125.3 (C-5), 29.1 (C-6), 129.3 (C-7), 207.6 (C-8), 55.8 (C-9), 126.6 (C-10), 137.2 (C-11), 19.8 (C-12), 22.2 (C-13), 15.5 (C-14), 16.6 (C-15).



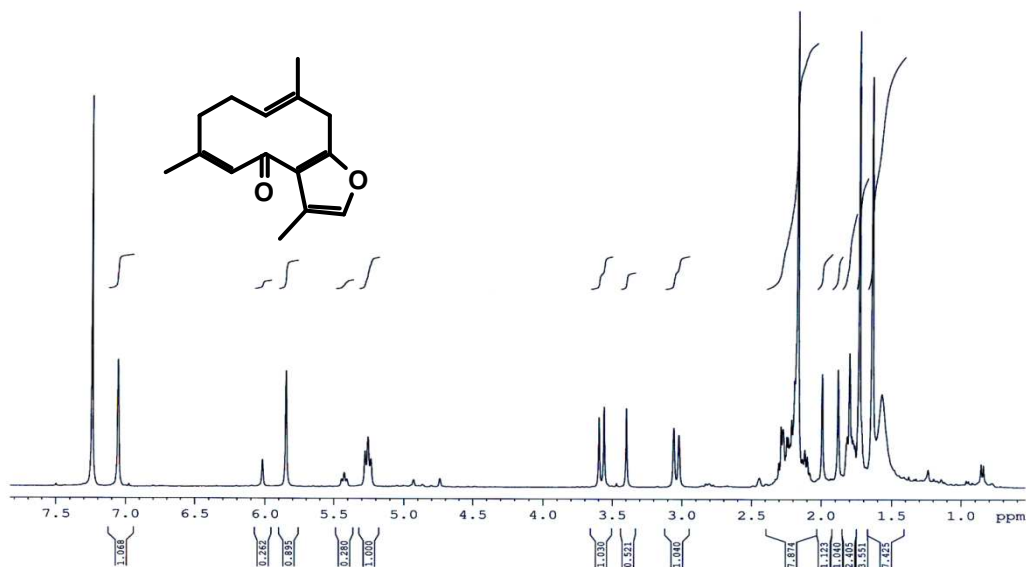
S3. $^1\text{H-NMR}$ spectrum of curzerenone (**2**) in CDCl_3

Curzerenone (**2**): $^1\text{H-NMR}$ (CDCl_3 , 400 MHz), δ : 5.78 (1H, dd, $J = 17.4, 13.0$ Hz, H-1), 4.98 (2H, dd, $J = 17.4, 4.3$ Hz, H-2), 4.73 (1H, br s, H-3 α), 4.98 (1H, br s, H-3 β), 2.99 (1H, s, H-5), 2.76 (1H, d, $J = 17.5$ Hz, H-9 α), 2.88 (1H, d, $J = 17.5$ Hz, H-9 β), 7.06 (3H, br s, H-12), 2.15 (3H, s, H-13), 1.81 (3H, s, H-14), 1.16 (3H, s, H-15).



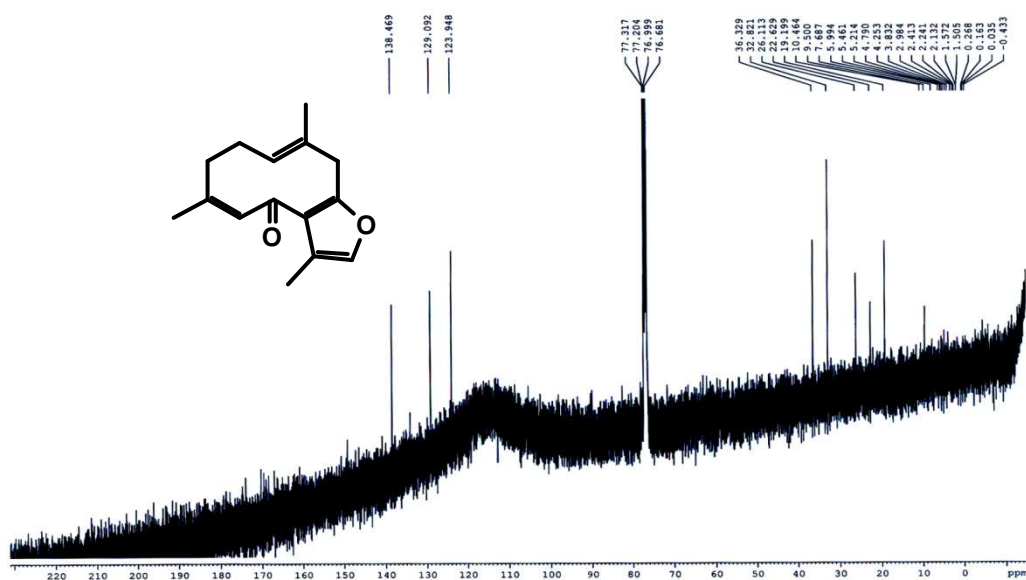
S4. $^{13}\text{C-NMR}$ spectrum of curzerenone (**2**) in CDCl_3

Curzerenone (**2**): $^{13}\text{C-NMR}$ (CDCl_3 , 100 MHz), δ : 145.5 (C-1), 112.9 (C-2), 115.5 (C-3), 141.0 (C-4), 64.5 (C-5), 194.7 (C-6), 119.2 (C-7), 165.4 (C-8), 33.6 (C-9), 42.8 (C-10), 120.1 (C-11), 139.5 (C-12), 8.9 (C-13), 24.7 (C-14), 24.7 (C-15).



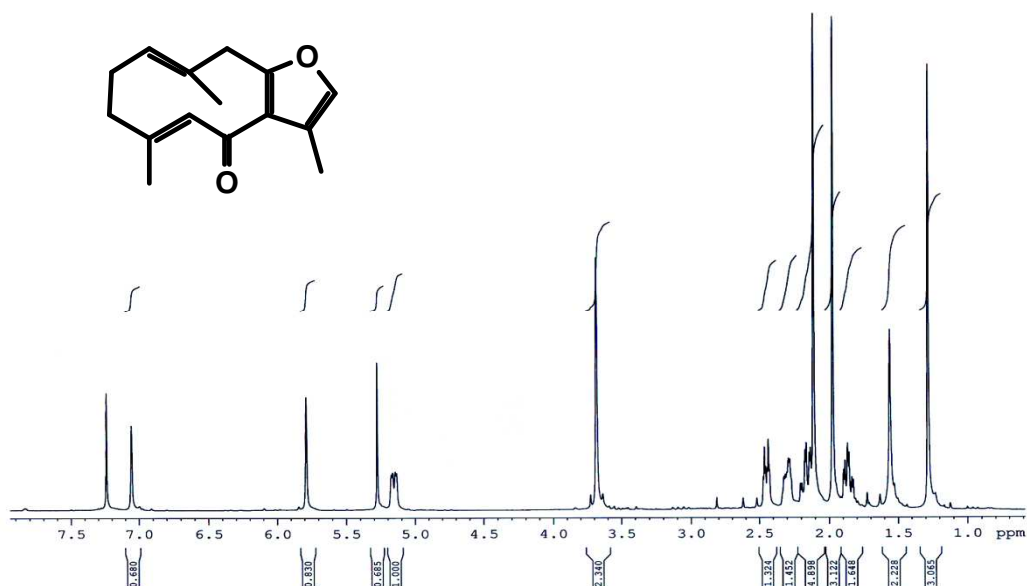
S5. ¹H-NMR spectrum of isofuranodienone (**3**) in CDCl₃

Isofuranodienone (**3**): ¹H-NMR (CDCl₃, 400 MHz), δ: 5.25 (1H, br t, *J* = 8.6 Hz, H-1), 1.78 (1H, m, H-2 α), 2.09 (1H, m, H-2 β), 2.20 (1H, m, H-3 α), 2.25 (1H, m, H-3 β), 5.84 (1H, br s, H-5), 3.03 (1H, d, *J* = 14.5 Hz, H-9 α), 3.57 (1H, d, *J* = 14.5 Hz, H-9 β), 7.05 (3H, br s, H-12), 2.16 (3H, br s, H-13), 1.73 (3H, s, H-14), 1.63 (3H, s, H-15).



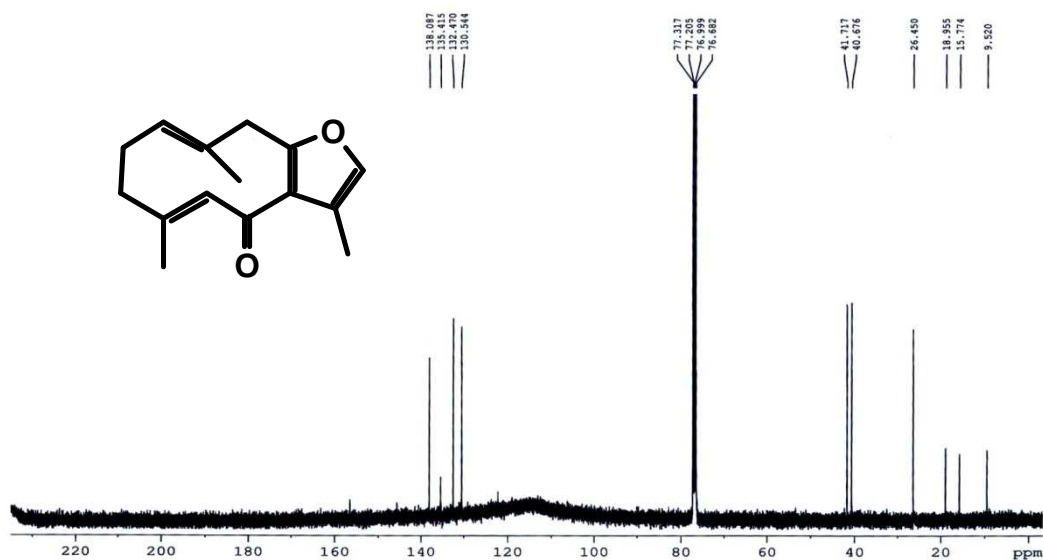
S6. ¹³C-NMR spectrum of isofuranodienone (**3**) in CDCl₃

Isofuranodienone (**3**): ¹³C-NMR (CDCl₃, 100 MHz), δ: 123.9 (C-1), 26.1 (C-2), 36.3 (C-3), 141.1 (C-4), 129.0 (C-5), 193.8 (C-6), 123.9 (C-7), 161.5 (C-8), 32.8 (C-9), 134.0 (C-10), 122.1 (C-11), 138.4 (C-12), 9.5 (C-13), 22.6 (C-14), 19.1 (C-15).



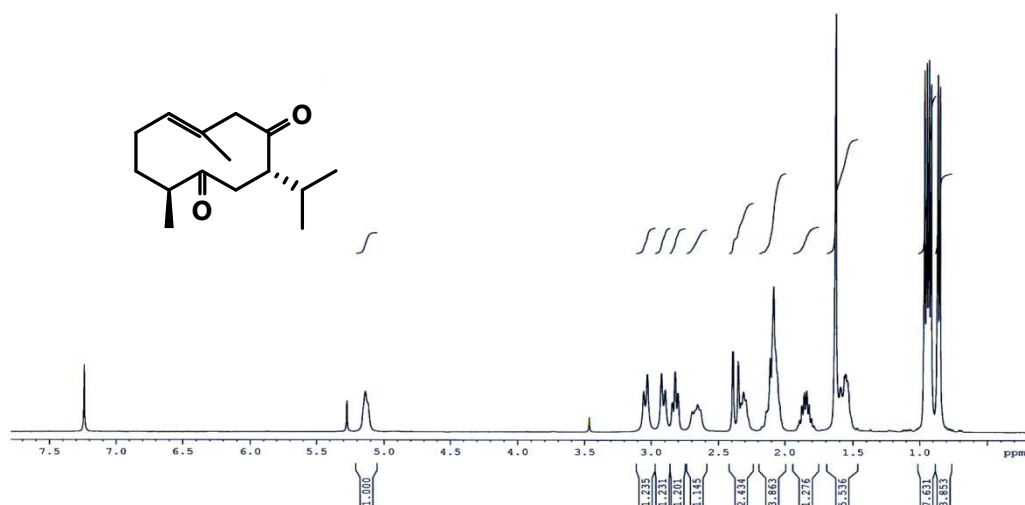
S7. $^1\text{H-NMR}$ spectrum of furanodienone (**4**) in CDCl_3

Furanodienone (**4**): $^1\text{H-NMR}$ (CDCl_3 , 400 MHz), δ : 5.15 (1H, dd, $J = 11.4, 4.1$ Hz, H-1), 2.16 (1H, td, $J = 12.4, 3.5$ Hz, H-2 α), 2.30 (1H, td, $J = 12.4, 4.1$ Hz, H-2 β), 1.85 (1H, td, $J = 11.4, 4.1$ Hz, H-3 α), 2.44 (1H, ddd, $J = 11.4, 6.9, 3.4$ Hz, H-3 β), 5.78 (1H, br s, H-5), 3.66 (1H, br d, $J = 14.5$ Hz, H-9 α), 3.70 (1H, br d, $J = 14.5$ Hz, H-9 β), 7.05 (3H, br s, H-12), 2.11 (3H, s, H-13), 1.97 (3H, s, H-14), 1.28 (3H, s, H-15).



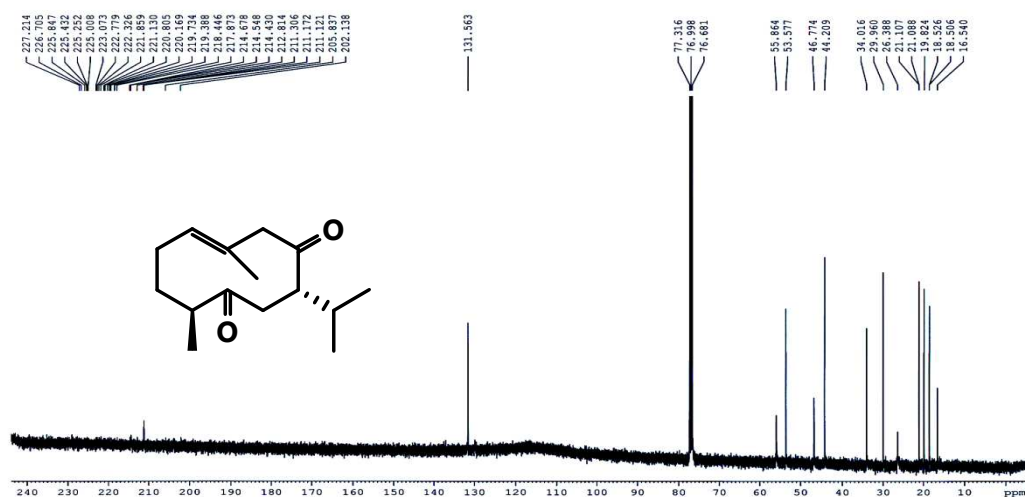
S8. $^{13}\text{C-NMR}$ spectrum of furanodienone (**4**) in CDCl_3

Furanodienone (**4**): $^{13}\text{C-NMR}$ (CDCl_3 , 100 MHz), δ : 130.5 (C-1), 26.4 (C-2), 40.6 (C-3), 145.8 (C-4), 132.4 (C-5), 190.0 (C-6), 123.9 (C-7), 156.5 (C-8), 41.7 (C-9), 135.4 (C-10), 122.0 (C-11), 138.0 (C-12), 9.5 (C-13), 18.9 (C-14), 15.7 (C-15).



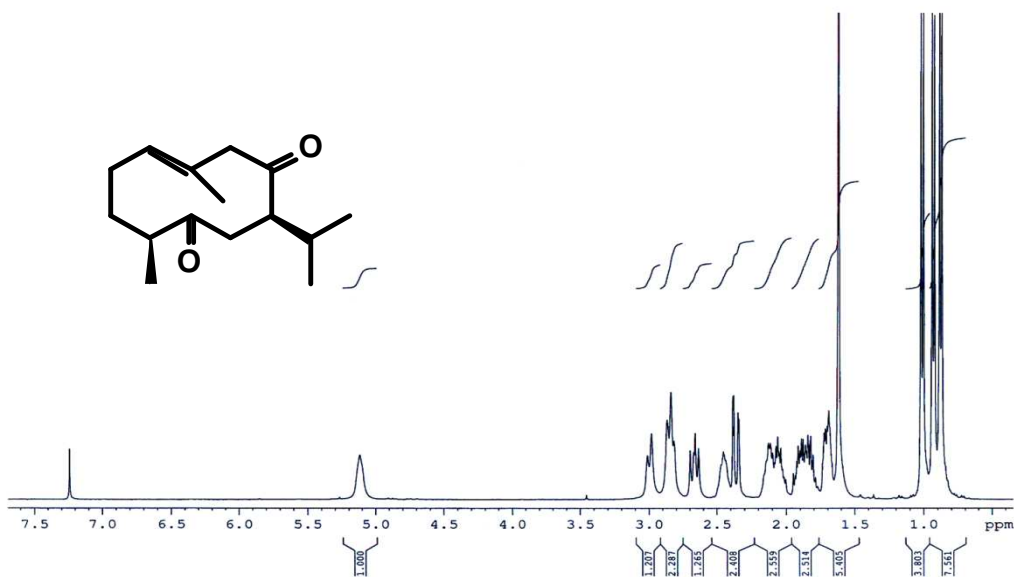
S9. $^1\text{H-NMR}$ spectrum of curdione (**5**) in CDCl_3

Curdione (**5**): $^1\text{H-NMR}$ (CDCl_3 , 400 MHz), δ : 5.14 (1H, br s, H-1), 2.08-2.13 (2H, m, H-2), 1.56 (1H, m, H-3 α), 2.08-2.13 (1H, m, H-3 β), 2.30 (1H, br s, H-4), 2.37 (1H, dd, $J = 16.4$, 1.5 Hz, H-6 α), 2.65 (1H, m, H-6 β), 2.88 (1H, ddd, $J = 16.4$, 8.5, 7.8 Hz, H-7), 2.91 (1H, d, $J = 10.7$ Hz, H-9 α), 3.04 (1H, d, $J = 10.7$ Hz, H-9 β), 1.85 (1H, m, H-11), 0.85 (3H, d, $J = 6.5$ Hz, H-12), 0.92 (3H, d, $J = 6.5$ Hz, H-13), 0.95 (3H, d, $J = 6.9$ Hz, H-14), 1.62 (3H, s, H-15).



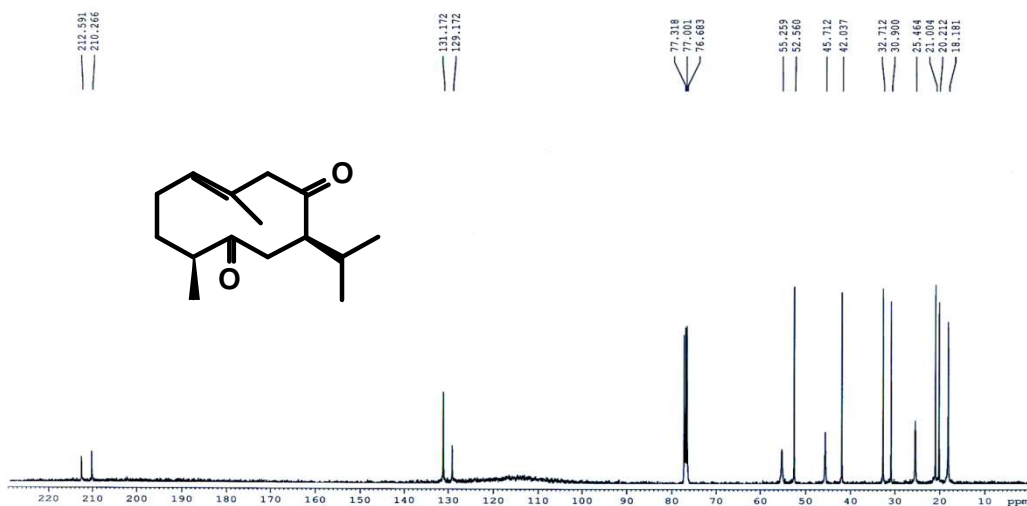
S10. $^{13}\text{C-NMR}$ spectrum of curdione (**5**) in CDCl_3

Curdione (**5**): $^{13}\text{C-NMR}$ (CDCl_3 , 100 MHz), δ : 131.5 (C-1), 26.3 (C-2), 34.0 (C-3), 46.7 (C-4), 214.6 (C-5), 44.2 (C-6), 53.5 (C-7), 211.1 (C-8), 55.8 (C-9), 129.2 (C-10), 29.9 (C-11), 21.1 (C-12), 19.8 (C-13), 18.5 (C-14), 16.5 (C-15).



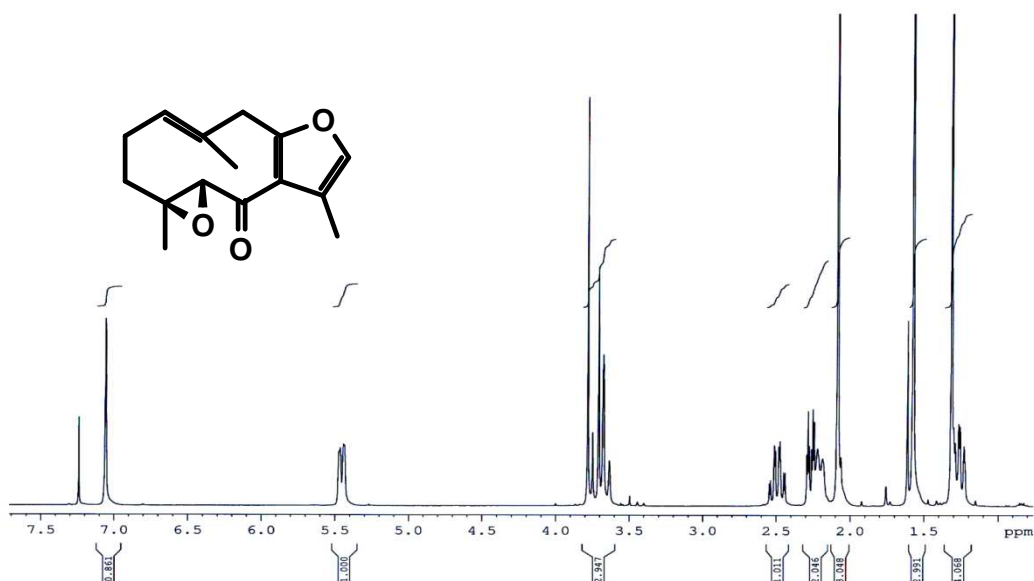
S11. $^1\text{H-NMR}$ spectrum of neocurdione (**6**) in CDCl_3

Neocurdione (**6**): $^1\text{H-NMR}$ (CDCl_3 , 400 MHz), δ : 5.11 (1H, br s, H-1), 2.02 (1H, m, H-2 α), 2.08 (1H, m, H-2 β), 1.70 (1H, m, H-3 α), 1.91 (1H, m, H-3 β), 2.45 (1H, br s, H-4), 2.36 (1H, dd, $J = 14.8, 2.4$ Hz, H-6 α), 2.66 (1H, dd, $J = 14.8, 10.3$ Hz, H-6 β), 2.83 (1H, ddd, $J = 19.5, 10.9, 8.5$ Hz, H-7), 2.82 (1H, br d, $J = 11.4$ Hz, H-9 α), 3.00 (1H, br d, $J = 11.4$ Hz, H-9 β), 1.81 (1H, m, H-11), 0.87 (3H, d, $J = 6.6$ Hz, H-12), 0.92 (3H, d, $J = 6.6$ Hz, H-13), 1.00 (3H, d, $J = 7.1$ Hz, H-14), 1.61 (3H, s, H-15).



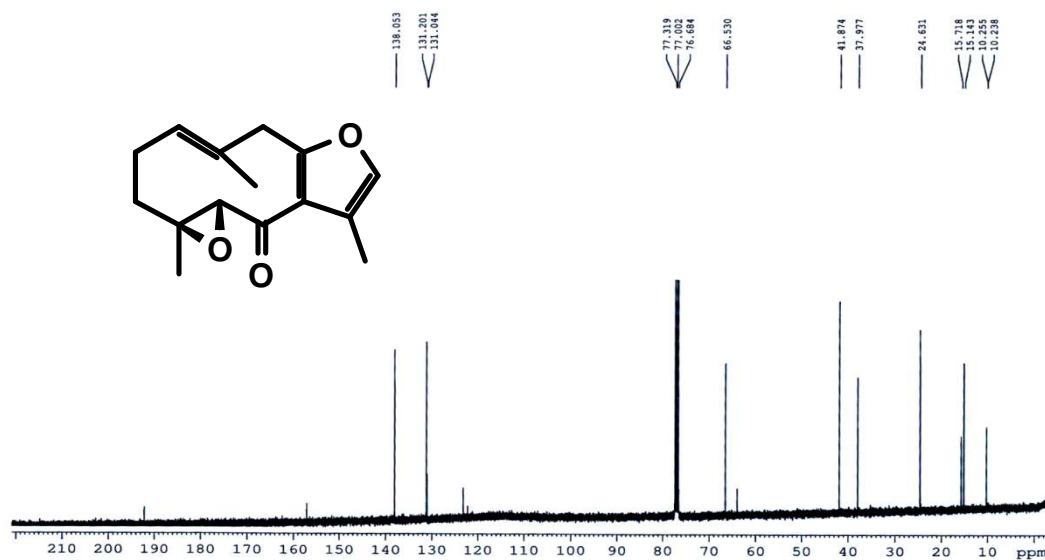
S12. $^{13}\text{C-NMR}$ spectrum of neocurdione (**6**) in CDCl_3

Neocurdione (**6**): $^{13}\text{C-NMR}$ (CDCl_3 , 100 MHz), δ : 131.1 (C-1), 25.4 (C-2), 32.7 (C-3), 45.7 (C-4), 212.5 (C-5), 42.0 (C-6), 52.5 (C-7), 210.2 (C-8), 55.2 (C-9), 129.1 (C-10), 30.9 (C-11), 21.0 (C-12), 20.3 (C-13), 18.1 (C-14), 18.1 (C-15).



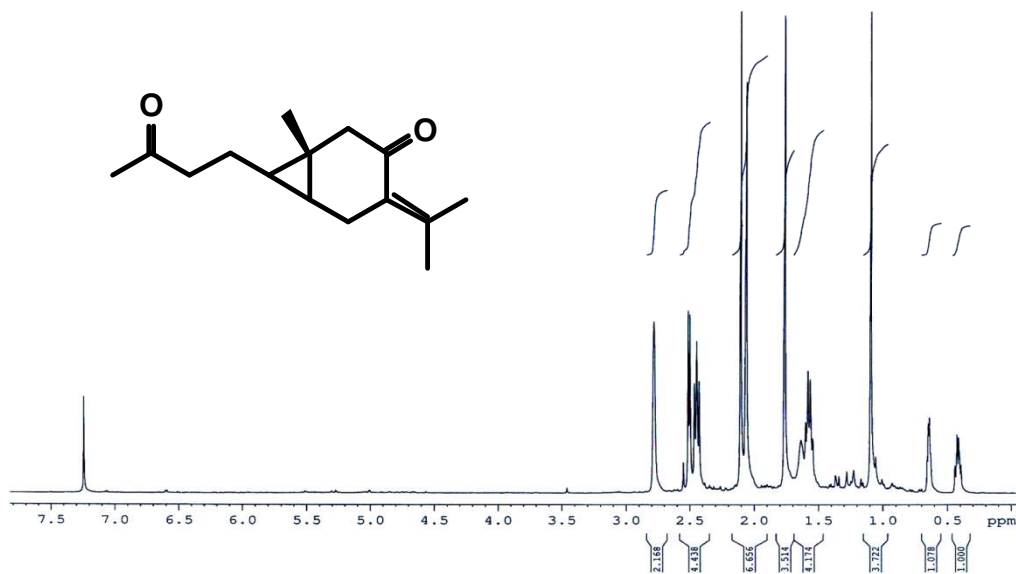
S13. $^1\text{H-NMR}$ spectrum of zederone (**7**) in CDCl_3

Zederone (**7**): $^1\text{H-NMR}$ (CDCl_3 , 400 MHz), δ : 5.46 (1H, dd, $J = 11.8, 3.6$ Hz, H-1), 2.17 (1H, br d, $J = 13.2$ Hz, H-2 α), 2.48 (1H, $J = \text{dddd}$, 13.6, 13.2, 11.9, 3.2 Hz, H-2 β), 1.25 (1H, ddd, $J = 12.8, 10.3, 3.8$ Hz, H-3 α), 2.26 (1H, ddd, $J = 12.8, 6.8, 3.2$ Hz, H-3 β), 3.78 (1H, br s, H-5), 3.65 (1H, d, $J = 16.4$ Hz, H-9 α), 3.72 (1H, d, $J = 16.4$ Hz, H-9 β), 7.05 (1H, s, H-12), 2.08 (3H, s, H-13), 1.31 (3H, s, H-14), 1.57 (3H, s, H-15).



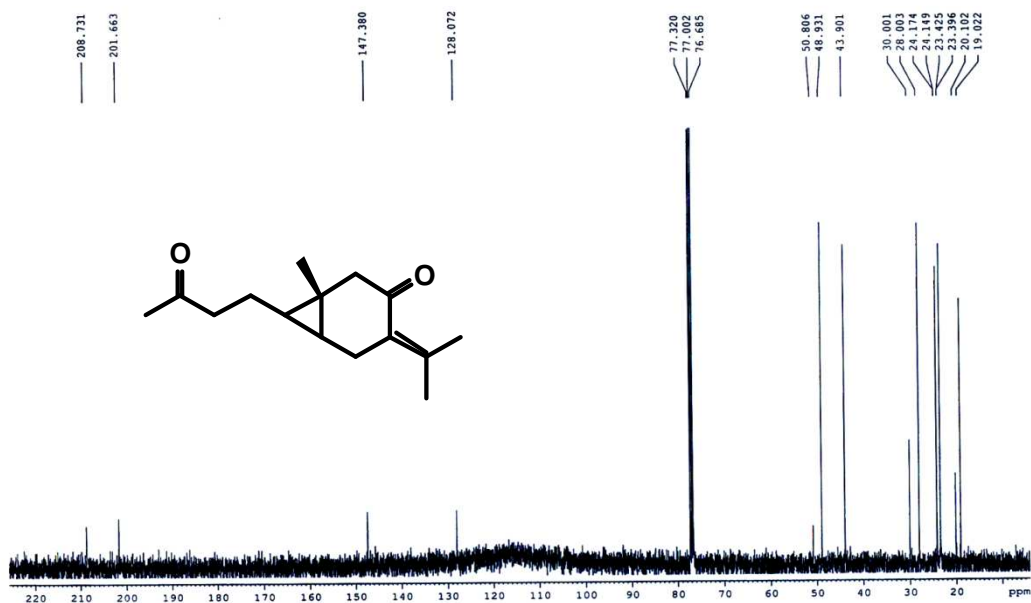
S14. $^{13}\text{C-NMR}$ spectrum of zederone (**7**) in CDCl_3

Zederone (**7**): $^{13}\text{C-NMR}$ (CDCl_3 , 100 MHz), δ : 131.2 (C-1), 24.6 (C-2), 37.9 (C-3), 64.0 (C-4), 66.5 (C-5), 192.1 (C-6), 123.2 (C-7), 157.0 (C-8), 41.8 (C-9), 131.0 (C-10), 122.2 (C-11), 138.0 (C-12), 10.2 (C-13), 15.1 (C-14), 15.7 (C-15).



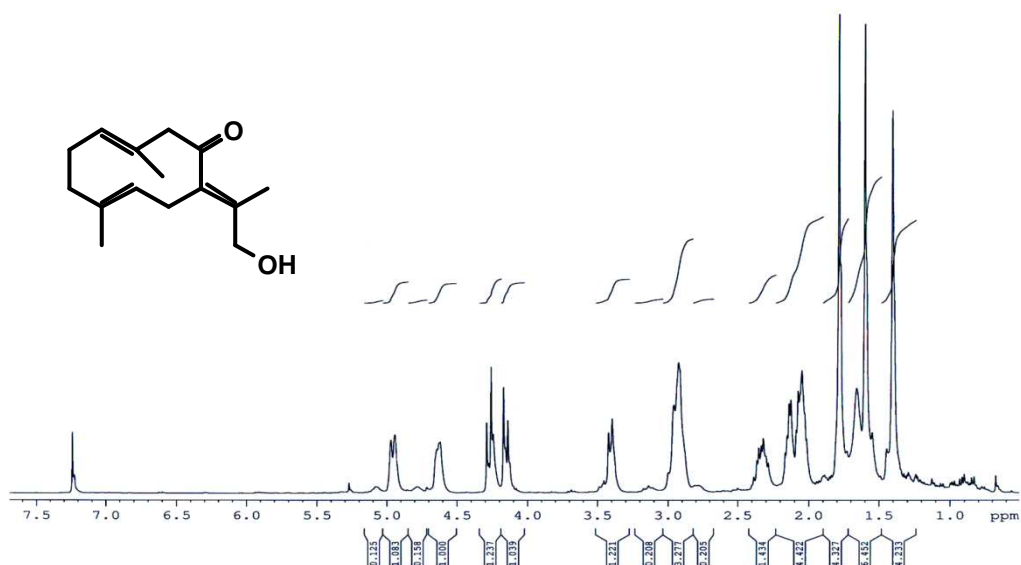
S15. $^1\text{H-NMR}$ spectrum of curcumenone (**8**) in CDCl_3

Curcumenone (**8**): $^1\text{H-NMR}$ (CDCl_3 , 400 MHz), δ : 0.41 (1H, dt, $J = 7.1, 4.3$ Hz, H-1), 1.59 (2H, q, $J = 7.1$ Hz, H-2), 2.44 (2H, t, $J = 7.1$ Hz, H-3), 0.63 (1H, q, $J = 4.3$ Hz, H-5), 2.78 (2H, br s, H-6), 2.48 (1H, d, 14.6 Hz, H-9 α), 2.53 (1H, d, 14.6 Hz, H-9 β), 2.06 (1H, s, H-12), 1.76 (3H, s, H-13), 2.10 (3H, s, H-14), 1.09 (3H, s, H-15).



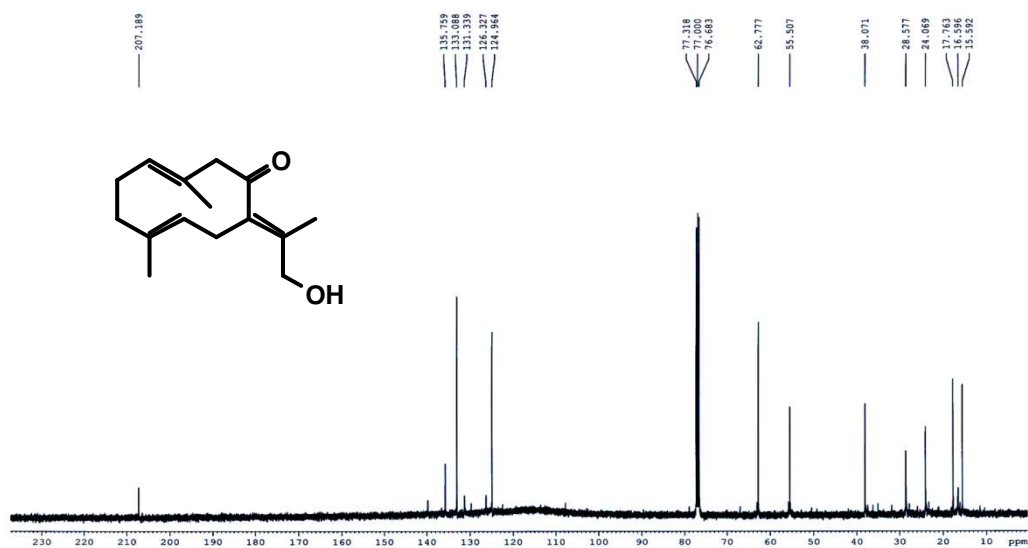
S16. $^{13}\text{C-NMR}$ spectrum of curcumenone (**8**) in CDCl_3

Curcumenone (**8**): $^{13}\text{C-NMR}$ (CDCl_3 , 100 MHz), δ : 24.1 (C-1), 23.4 (C-2), 43.9 (C-3), 208.7 (C-4), 24.1 (C-5), 28.0 (C-6), 128.0 (C-7), 201.6 (C-8), 48.9 (C-9), 20.1 (C-10), 147.3 (C-11), 23.4 (C-12), 23.4 (C-13), 30.0 (C-14), 19.0 (C-15).



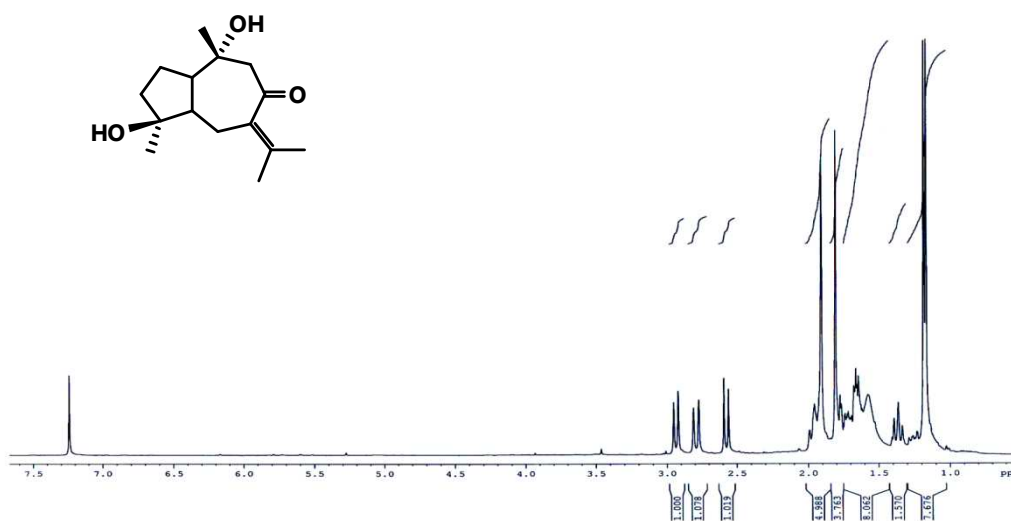
S17. $^1\text{H-NMR}$ spectrum of 13-hydroxygermacrone (**9**) in CDCl_3

13-Hydroxygermacrone (9): $^1\text{H-NMR}$ (CDCl_3 , 400 MHz), δ : 4.95 (1H, br d, $J = 11.6$ Hz, H-1), 2.04 (1H, m, H-2 α), 2.14 (1H, m, H-2 β), 2.05 (1H, m, H-3 α), 2.14 (1H, m, H-3 β), 4.61 (1H, br d, $J = 12.0$ Hz, H-5), 2.94 (2H, m, H-6), 2.93 (1H, br d, $J = 11.8$ Hz, H-9 α), 3.40 (1H, br d, $J = 11.8$ Hz, H-9 β), 1.78 (3H, s, H-12), 4.15 (1H, d, $J = 12.2$ Hz, H-13), 4.27 (1H, d, $J = 12.2$ Hz, H-13), 1.40 (3H, s, H-14), 1.60 (3H, s, H-15).



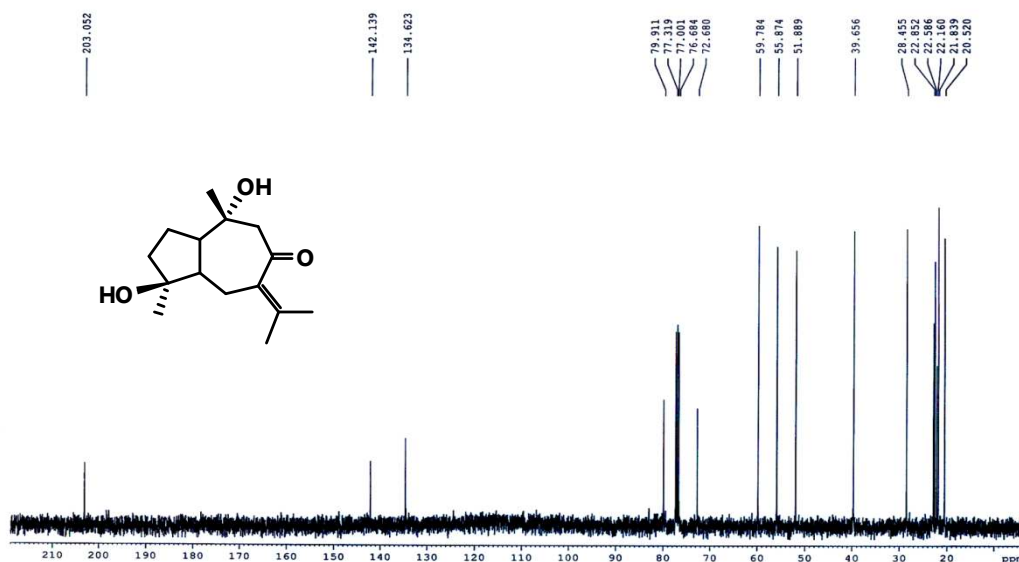
S18. $^{13}\text{C-NMR}$ spectrum of 13-hydroxygermacrone (**9**) in CDCl_3

13-Hydroxygermacrone (9): $^{13}\text{C-NMR}$ (CDCl_3 , 100 MHz), δ : 133.0 (C-1), 24.0 (C-2), 38.0 (C-3), 135.7 (C-4), 124.9 (C-5), 28.5 (C-6), 131.3 (C-7), 207.1 (C-8), 55.5 (C-9), 126.3 (C-10), 139.9 (C-11), 17.7 (C-12), 62.7 (C-13), 15.5 (C-14), 16.5 (C-15).



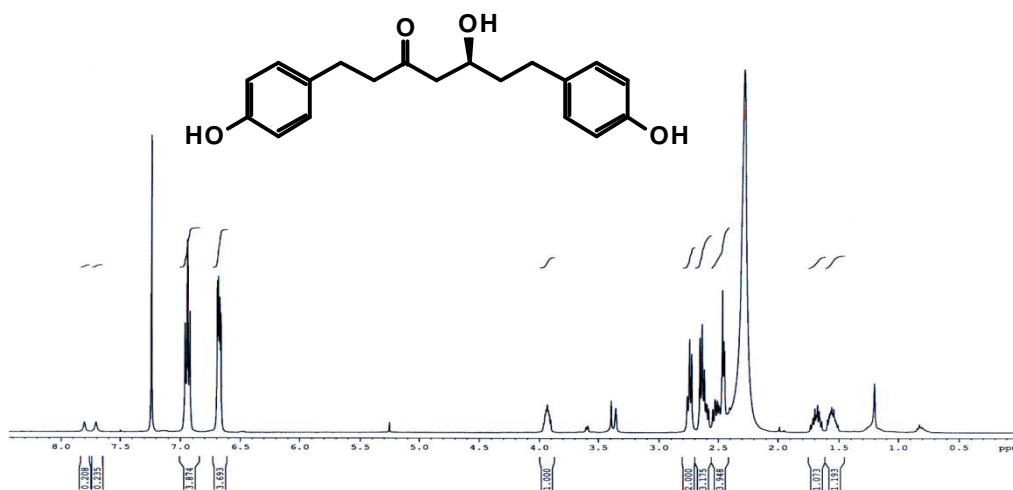
S19. $^1\text{H-NMR}$ spectrum of zedoarondiol (**10**) in CDCl_3

Zedoarondiol (**10**): $^1\text{H-NMR}$ (CDCl_3 , 400 MHz), δ : 1.93 (1H, m, H-1), 1.58-1.75 (2H, m, H-2), 1.58-1.75 (2H, m, H-3), 1.34 (1H, t, $J=11.4$ Hz, H-5), 1.95 (1H, br d, $J=13.2$ Hz, H-6 α), 2.77 (1H, d, $J=13.2$ Hz, H-6 β), 2.54 (1H, d, $J=12.6$ Hz, H-9 α), 2.91 (1H, d, $J=12.6$ Hz, H-9 β), 1.89 (3H, s, H-12), 1.79 (3H, s, H-13), 1.16 (3H, s, H-14), 1.14 (3H, s, H-15).



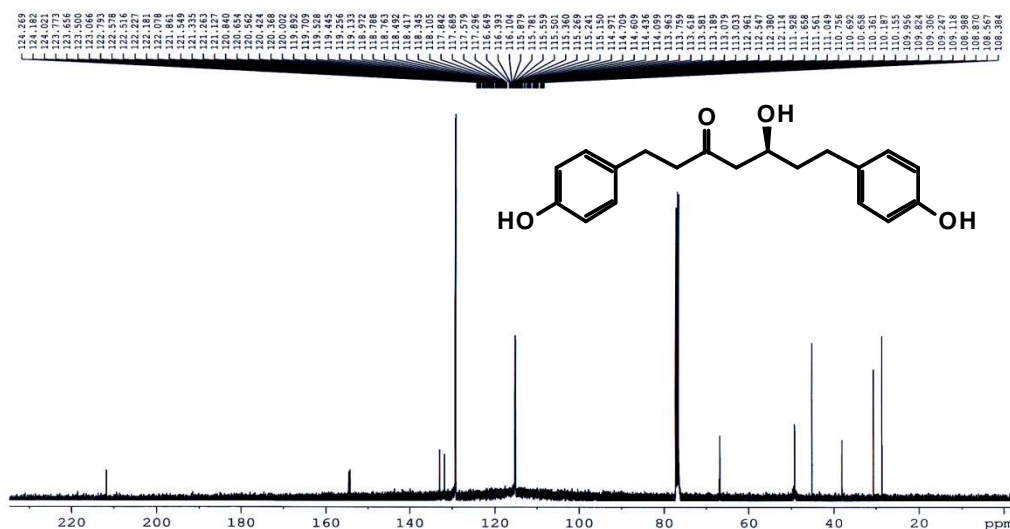
S20. $^{13}\text{C-NMR}$ spectrum of zedoarondiol (**10**) in CDCl_3

Zedoarondiol (**10**): $^{13}\text{C-NMR}$ (CDCl_3 , 100 MHz), δ : 55.8 (C-1), 21.8 (C-2), 39.6 (C-3), 79.9 (C-4), 51.8 (C-5), 28.4 (C-6), 134.6 (C-7), 203.0 (C-8), 59.7 (C-9), 72.6 (C-10), 142.1 (C-11), 22.8 (C-12), 22.1 (C-13), 22.5 (C-14), 20.5 (C-15).



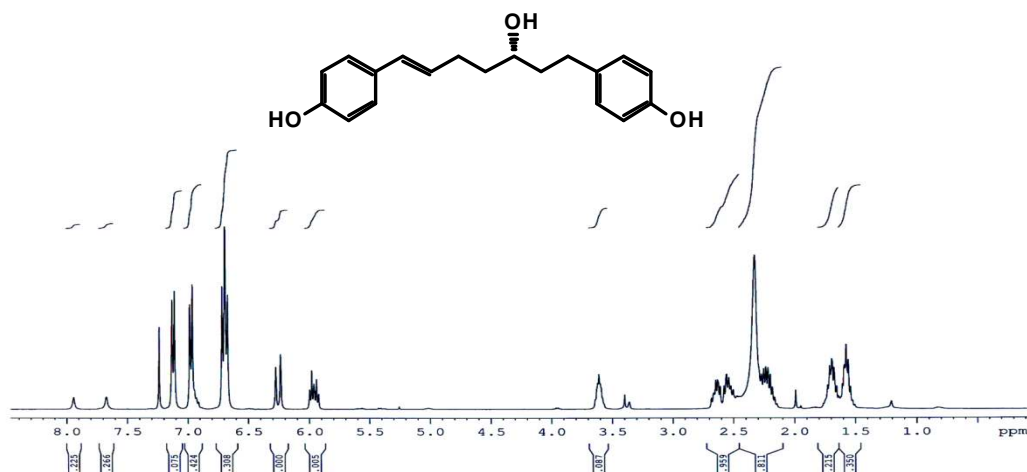
S21. $^1\text{H-NMR}$ spectrum of 3-hydroxy-5-platyphyllone (**11**) in CDCl_3

3-Hydroxy-5-platyphyllone (**11**): $^1\text{H-NMR}$ (CDCl_3 , 400 MHz), δ : 2.52 (1H, m, H-1a), 2.59 (1H, m, H-1b), 1.56 (1H, m, H-2a), 1.67 (1H, m, H-2b), 3.93 (1H, m, H-3), 2.45 (2H, dd, $J = 4.7, 2.5$ Hz, H-4), 2.64 (2H, t, $J = 7.1$ Hz, H-6), 2.74 (2H, t, $J = 7.1$ Hz, H-7), 6.95 (2H, d, $J = 8.1$ Hz, H-2', 6'), 6.68 (2H, d, $J = 8.1$ Hz, H-3', 5'), 6.93 (2H, d, $J = 8.1$ Hz, H-2'', 6''), 6.67 (2H, d, $J = 8.1$ Hz, H-3'', 5'').



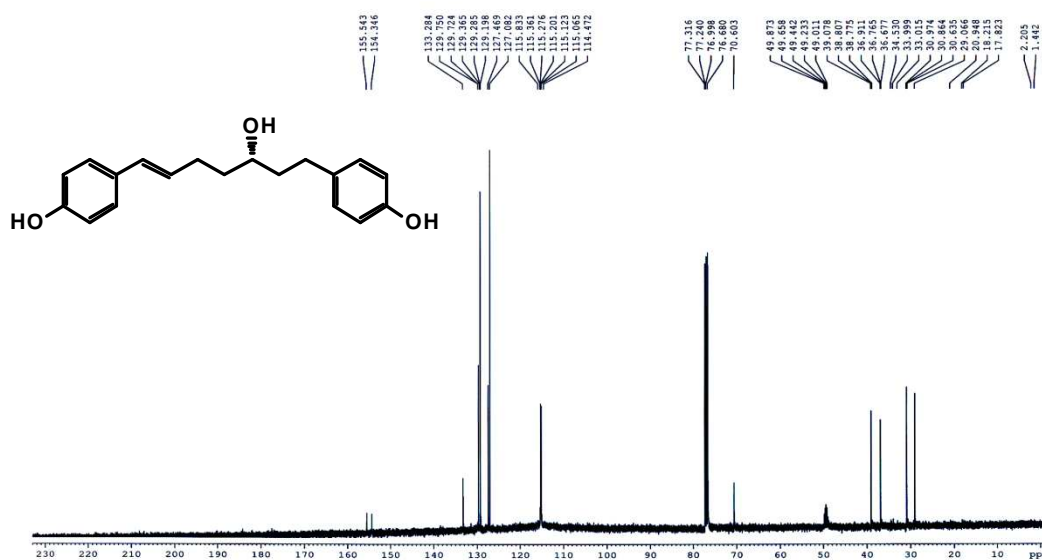
S22. $^{13}\text{C-NMR}$ spectrum of 3-hydroxy-5-platyphyllone (**11**) in CDCl_3

3-Hydroxy-5-platyphyllone (**11**): $^{13}\text{C-NMR}$ (CDCl_3 , 100 MHz), δ : 30.6 (C-1), 38.1 (C-2), 66.9 (C-3), 49.2 (C-4), 211.7 (C-5), 45.2 (C-6), 28.6 (C-7), 132.9 (C-1'), 129.3 (C-2', 6'), 115.2 (C-3', 5'), 154.3 (C-4'), 131.8 (C-1''), 129.2 (C-2'', 6''), 115.1 (C-3'', 5''), 154.6 (C-4'').



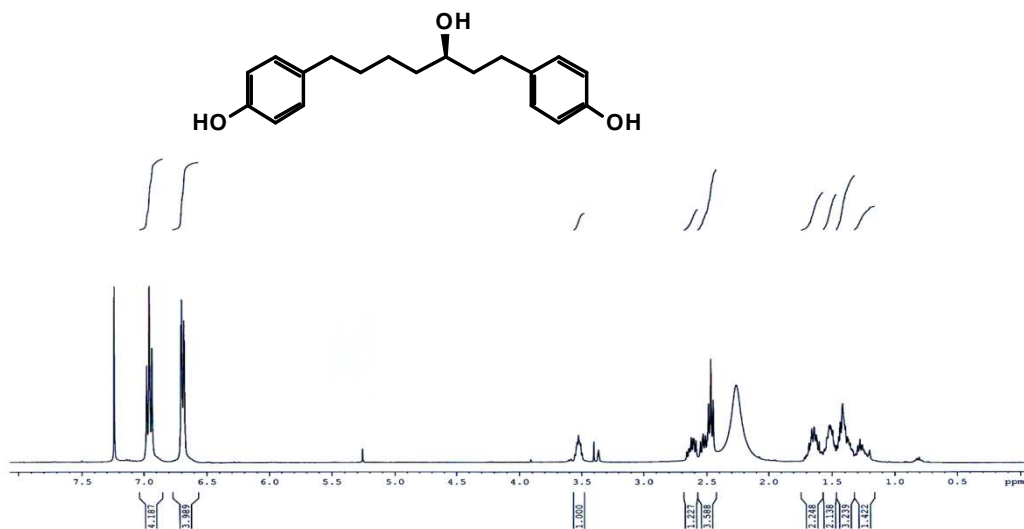
S23. $^1\text{H-NMR}$ spectrum of (3*S*)-1,7-bis(4-hydroxyphenyl)-(6*E*)-6-hepten-3-ol (**12**) in CDCl_3

(3*S*)-1,7-bis(4-Hydroxyphenyl)-(6*E*)-6-hepten-3-ol (**12**): $^1\text{H-NMR}$ (CDCl_3 , 400 MHz), δ : 2.52 (1H, m, H-1a), 2.65 (1H, m, H-1b), 1.69 (2H, m, H-2), 3.61 (1H, m, H-3), 1.57 (2H, m, H-4), 2.21 (2H, m, H-5), 5.96 (1H, dt, $J = 15.6, 6.9$ Hz, H-6), 6.25 (1H, d, $J = 15.6$ Hz, H-7), 6.97 (2H, d, $J = 8.2$ Hz, H-2', 6'), 6.68 (2H, d, $J = 8.2$ Hz, H-3', 5'), 7.12 (2H, d, $J = 8.6$ Hz, H-2'', 6''), 6.70 (2H, d, $J = 8.6$ Hz, H-3'', 5'').



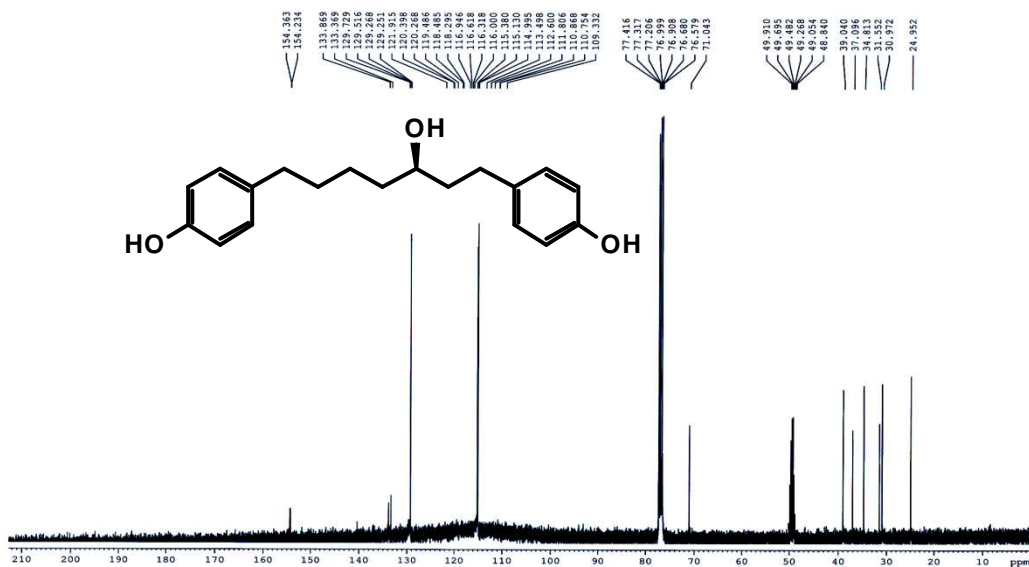
S24. $^{13}\text{C-NMR}$ spectrum of (3*S*)-1,7-bis(4-hydroxyphenyl)-(6*E*)-6-hepten-3-ol (**12**) in CDCl_3

(3*S*)-1,7-bis(4-Hydroxyphenyl)-(6*E*)-6-hepten-3-ol (**12**): $^{13}\text{C-NMR}$ (CDCl_3 , 100 MHz), δ : 30.8 (C-1), 38.8 (C-2), 70.6 (C-3), 36.7 (C-4), 29.0 (C-5), 127.4 (C-6), 129.7 (C-7), 133.2 (C-1'), 129.2 (C-2', 6'), 115.3 (C-3', 5'), 154.3 (C-4'), 129.7 (C-1''), 127.0 (C-2'', 6''), 115.2 (C-3'', 5''), 155.5 (C-4'').



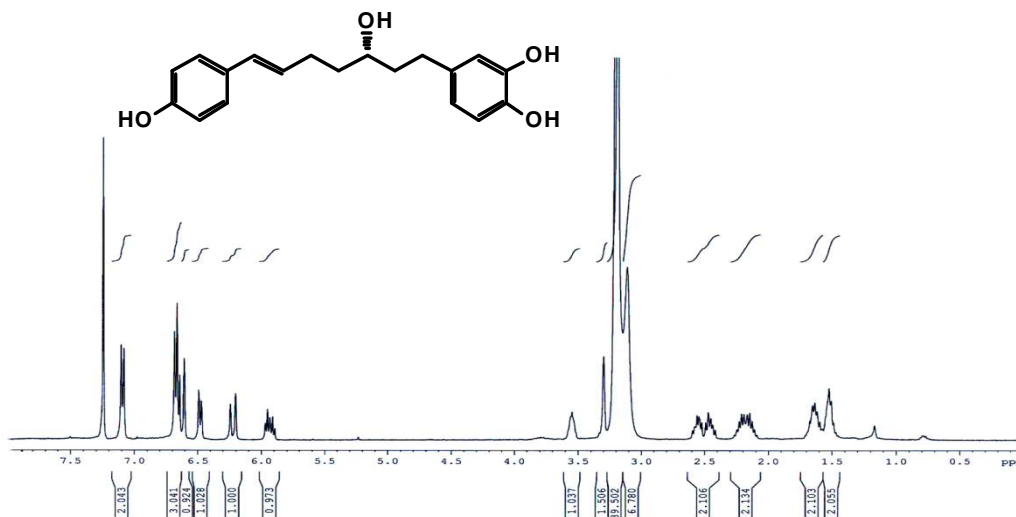
S25. $^1\text{H-NMR}$ spectrum of centrolol (**13**) in CDCl_3

Centrolol (**13**): $^1\text{H-NMR}$ (CDCl_3 , 400 MHz), δ : 2.53 (1H, m, H-1a), 2.62 (1H, m, H-1b), 1.65 (2H, m, H-2), 3.52 (1H, m, H-3), 1.51 (2H, m, H-4), 1.23 (1H, m, H-5a), 1.39 (1H, m, H-5b), 1.42 (2H, m, H-6), 2.46 (2H, t, $J = 7.5$ Hz, H-7), 6.96 (2H, d, $J = 8.5$ Hz, H-2', 6'), 6.69 (2H, d, $J = 8.5$ Hz, H-3', 5'), 6.94 (2H, d, $J = 8.6$ Hz, H-2'', 6''), 6.68 (2H, d, $J = 8.6$ Hz, H-3'', 5'').



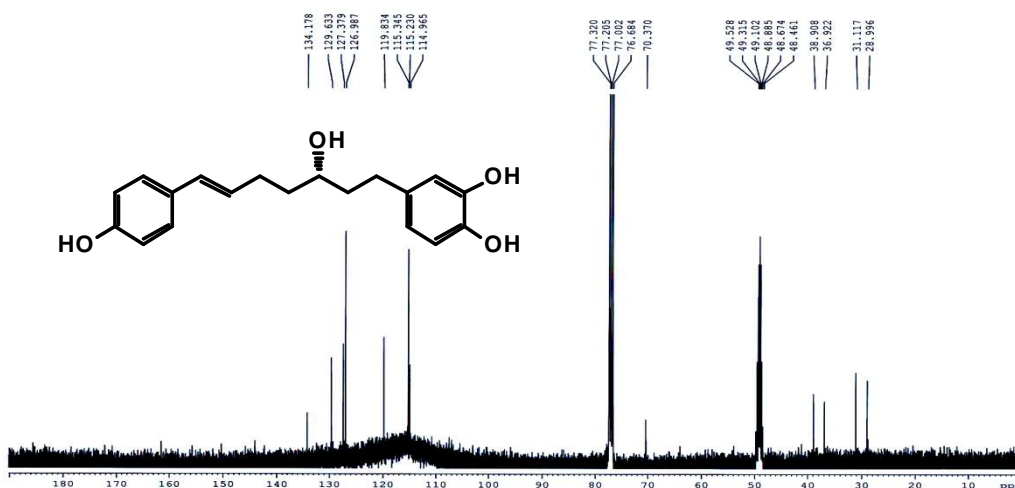
S26. $^{13}\text{C-NMR}$ spectrum of centrolol (**13**) in CDCl_3

Centrolol (**13**): $^{13}\text{C-NMR}$ (CDCl_3 , 100 MHz), δ : 30.9 (C-1), 39.0 (C-2), 71.0 (C-3), 31.5 (C-4), 24.9 (C-5), 37.0 (C-6), 34.8 (C-7), 133.6 (C-1'), 129.2 (C-2', 6'), 115.3 (C-3', 5'), 154.2 (C-4'), 133.8 (C-1''), 129.2 (C-2'', 6''), 115.1 (C-3'', 5''), 154.3 (C-4'').



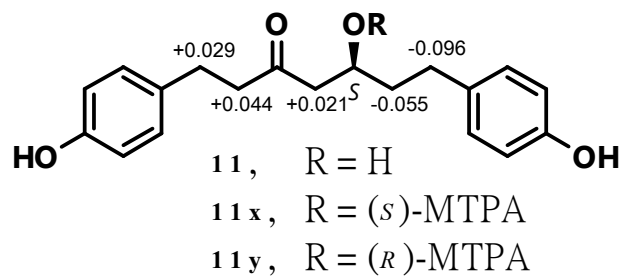
S27. $^1\text{H-NMR}$ spectrum of (3*S*)-1-(3,4-dihydroxyphenyl)-7-(4-hydroxyphenyl)-(6*E*)-6-hepten-3-ol (**14**) in CDCl_3

(3*S*)-1-(3,4-Dihydroxyphenyl)-7-(4-hydroxyphenyl)-(6*E*)-6-hepten-3-ol (**14**): $^1\text{H-NMR}$ (CDCl_3 , 400 MHz), δ : 2.46 (1H, m, H-1a), 2.54 (1H, m, H-1b), 1.64 (2H, m, H-2), 3.54 (1H, m, H-3), 1.50 (2H, m, H-4), 2.17 (2H, m, H-5), 5.94 (1H, dt, $J = 15.7, 6.9$ Hz, H-6), 6.22 (1H, d, $J = 15.7$ Hz, H-7), 6.46 (1H, br s, H-2'), 6.64 (1H, d, $J = 8.0$ Hz, H-5'), 6.22 (1H, d, $J = 8.0$ Hz, H-6'), 7.09 (2H, d, $J = 8.3$ Hz, H-2'', 6''), 6.66 (2H, d, $J = 8.3$ Hz, H-3'', 5'').

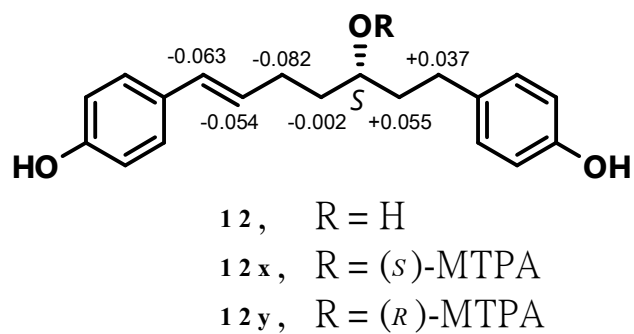


S28. $^{13}\text{C-NMR}$ spectrum of (3*S*)-1-(3,4-dihydroxyphenyl)-7-(4-hydroxyphenyl)-(6*E*)-6-hepten-3-ol (**14**) in CDCl_3

(3*S*)-1-(3,4-Dihydroxyphenyl)-7-(4-hydroxyphenyl)-(6*E*)-6-hepten-3-ol (**14**): $^{13}\text{C-NMR}$ (CDCl_3 , 100 MHz), δ : 31.1 (C-1), 38.9 (C-2), 70.3 (C-3), 36.9 (C-4), 29.9 (C-5), 127.3 (C-6), 129.6 (C-7), 134.1 (C-1'), 114.2 (C-2'), 144.2 (C-3'), 142.3 (C-4'), 115.3 (C-5'), 119.8 (C-6'), 129.3 (C-1''), 126.9 (C-2'', 6''), 115.2 (C-3'', 5''), 155.6 (C-4'').



S29. $\Delta\delta = (\Delta\delta_S - \Delta\delta_R)$ values in ppm obtained from the MTPA esters of **11** in CDCl₃.



S30. $\Delta\delta = (\Delta\delta_S - \Delta\delta_R)$ values in ppm obtained from the MTPA esters of **12** in CDCl₃.